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EXAMINER	
LE, MIRANDA	

ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	09/706,926	JOSHI, RAJASHRI	
	Examiner	Art Unit	
	MIRANDA LE	2159	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 April 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3,4 and 6-10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3,4 and 6-10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

This communication is responsive to Amendment, filed 02/23/2005.

Claims 1, 3, 4, 6-10 are pending in this application. This action is made Final.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 4, 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Qian et al. (US Patent No. 6,108,609), in view of Shiihara (US Patent No. 5,541,592), in view of Knupp (US Patent No. 5,966,672), and Pavone et al. (US

Patent No. 5,663,929), and further in view of Zhang et al. (US Patent No. 6,882,997).

As per claim 1, Qian teaches a method for representing cartographic data *(i.e. These variables simultaneously change as the user changes the design. If the user incorporates those parameters into his own application, the user can see the effect of the different design. FIG. 33 illustrates how LabVIEW uses these two parameters to implement a Wavelet Packet similar to the one displayed in FIG. 32, Wavelet Packet, col. 20, lines 52-57)* in a computer-based system, comprising:

providing a cartographic database *(i.e. Data--Reads a 2D spreadsheet text file or stand image file, such as a.TIF or .BMP file. Be sure to choose the correct data type when reading the data file, col. 19, lines 48-50)* containing a sequence of latitude and longitude *(i.e. Two-Dimensional Data Test, col. 19, lines 9-13)* data points indicating locations along geographic feature, wherein the sequence of latitude and longitude data points provide a data point representation of the geographic feature; *(i.e. The system and method first selects a filter P(z) in response to user input, wherein a mother wavelet is associated with the filter P(z). Selecting the type of filter P(z) comprises selecting an orthogonal type or biorthogonal type of filter, as well as selecting either a maximum flat type of filter or equiripple type of filter, Summary)*;

using the latitude and longitude data points to generate a parameterized function representing the geographic feature *(i.e. These variables simultaneously change as the user changes the design. If the user incorporates those parameters into his own application, the user can see the effect of the different design. FIG. 33 illustrates how*

LabVIEW uses these two parameters to implement a Wavelet Packet similar to the one displayed in FIG. 32, Wavelet Packet, col. 20, lines 52-57);

computing a plurality of wavelet coefficients *(i.e. wavelet coefficients, col. 3, lines 19-43)* form said parameterized function representing the geographic features *(i.e. Wavelet analysis can be used for a variety of functions, col. 20, lines 58-62; the user further can select a number of taps parameter in response to user input, wherein the number of taps parameter determines a number of coefficients of P(z), Summary)*, wherein said wavelet coefficients obtained with a wavelet *(i.e. This procedure is called the wavelet transform ψ (t) is called the mother wavelet because the different wavelets used to measure s(t) are the dilated and shifted versions of this wavelet. The results of each comparison, Wm,n, are named wavelet coefficients, col. 3, lines 19-43)*, wherein said wavelet being one of a family of function having a form:

ψ_{ab} (x) = ψ (|a| to the power $_{-1/2}$) ψ ((x-b)/2) *(col. 2, formula 3-4)*

where in ψ_{ab} (x) is called a mother wavelet *(i.e. the mother wavelet function, See Abstract)*, a *(i.e. m, col. 2, line 55 to col. 3, line 7)* is called a dilation parameter, b *(i.e. n, col. 2, line 55 to col. 3, line 7)* is called a translation parameter *(i.e. n, col. 2, line 55 to col. 3, line 7),* and x *(i.e. t, col. 2, lines 55 to col. 3, line 7)* is an independent variable, wherein said computing the wavelet coefficients includes applying a wavelet transform to said parameterized function defined by the data points representing the geographic feature *(i.e. The present invention comprises a system and method for graphically designing a mother wavelet. The system and method thus enables the user to interactively design a mother wavelet for a desired test signal or application using*

graphical design techniques. The present invention allows a user to arbitrarily design new mother wavelets in real time using an improved graphical user interface, Summary);

assigning each of the computed wavelet coefficients to at least one of a plurality of display scales for a map display *(i.e. The index m and n are the scale, col. 3, lines 19-43; Refinement--Defines how many levels to go through to compute the wavelet and scaling function. A proper wavelet usually converges after 4 or 5 levels, col. 19, lines 62-64)*;

indexing the wavelet coefficients *(i.e. Using wavelet analysis, one also can look at a signal from different scales, commonly called multiscale analysis. Wavelet transform-based multiscale analysis provides a better understanding of the signal and provides a useful tool for selectively discarding undesired components, such as noise and trend, that corrupt the original signals, col. 21, lines 20-25)* by the assigned display scales for the map display *(i.e. The index m and n are the scale, col. 3, lines 19-43; Refinement--Defines how many levels to go through to compute the wavelet and scaling function. A proper wavelet usually converges after 4 or 5 levels, col. 19, lines 62-64)*; and

after said step of computing, storing the wavelet coefficients *(i.e. The user can save all design results as text files for use in other applications, col. 20, lines 1-19; This section introduces a few applications that the user can develop with the help of this toolkit. The user can create all the examples described in this section with or without LabVIEW, because the user always can incorporate the filter bank coefficients into his*

applications from previously saved text files, col. 20, lines 1-19) in a computer-usable database on a physical storage medium to provide a wavelet-based representation of the geographic feature *(i.e. Save Scaling and Wavelets--Saves the scaling functions and wavelets for the analysis and synthesis filters in a text file, col. 19, lines 65-67).*

The teaching of Qian implies these limitations:

cartographic data *(i.e. Data--Reads a 2D spreadsheet text file or stand image file, such as a.TIF or .BMP file. Be sure to choose the correct data type when reading the data file, col. 19, lines 48-50)*;

latitude and longitude *(i.e. Two-Dimensional Data Test, col. 19, lines 9-13)* data points indicating locations *(i.e. These variables simultaneously change as the user changes the design. If the user incorporates those parameters into his own application, the user can see the effect of the different design. FIG. 33 illustrates how LabVIEW uses these two parameters to implement a Wavelet Packet similar to the one displayed in FIG. 32, Wavelet Packet, col. 20, lines 52-57)*;

using the latitude and longitude data points to generate a parameterized function representing the geographic feature *(i.e. These variables simultaneously change as the user changes the design. If the user incorporates those parameters into his own application, the user can see the effect of the different design. FIG. 33 illustrates how LabVIEW uses these two parameters to implement a Wavelet Packet similar to the one displayed in FIG. 32, Wavelet Packet, col. 20, lines 52-57)*;

assigning each of the computed wavelet coefficients to at least one of a plurality of display scales for a map display *(i.e. The index m and n are the scale, col. 3,*

lines 19-43; Refinement--Defines how many levels to go through to compute the wavelet and scaling function. A proper wavelet usually converges after 4 or 5 levels, col. 19, lines 62-64);

a family of function having a form:

ψ_{ab} (x) = ψ (|a| to the power $_{-1/2}$) ψ ((x-b)/a) *(col. 2, formula 3-4)*.

Qian does not clearly state the above limitations.

Shiihara teaches:

latitude and longitude data points indicating locations *(See Figs. 3-5)*;

using the latitude and longitude data points to generate a parameterized function representing the geographic feature *(See Figs. 3-5)*;

assigning each of the computed wavelet coefficients to at least one of a plurality of display scales for a map display *(See Figs. 3-5)*.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains to have modified the *computed wavelet and scaling function* of Qian by applying the teaching of Shiihara in order to provide a positioning system having an improved simulated navigation mode on a map displaying.

Qian and Shiihara do not state "cartographic data"

Knupp teaches cartographic data *(i.e. coordinate information for locating all data will be needed, which includes X, Y, Z and geometry data for seismic, well coordinates, cartographic data, and well deviation data, col. 18, lines 39-41)*;

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains to have modified the *computed wavelet and scaling function* of Qian by applying the teaching of Knupp in order to effectively achieve the best representation of data which allows users to comprehend and analyze data at greatly enhanced rates (see Background of the invention).

Qian, Shiihara, Knupp do not exactly teach a mother wavelet as:

ψ_{ab} (x) = ψ (|a| to the power $_{-1/2}$) ψ ((x-b)/a)

Pavone teaches this mother wavelet in col. 6, lines 50-55.

It would have been obvious to one of ordinary skill of the art having the teaching of Qian, Shiihara, Knupp, and Pavone at the time the invention was made to modify the system of Qian, Shiihara, Knupp to include the limitations as taught by Pavone. One of ordinary skill in the art would be motivated to make this combination in order to decompose each segment into a wavelet so as to obtain the wavelet coefficients in view of Pavone (Abstract), as doing so would give the added benefit of providing the stage of transmission of certain characteristic coefficients as taught by Pavone (Abstract).

Qian, Shiihara, Knupp, Pavone do not teach wherein the wavelet-based representation has a smaller data size than the data point representation of the geographic feature.

Zhang teaches this limitation at Fig. 5.

It would have been obvious to one of ordinary skill of the art having the teaching of Qian, Shiihara, Knupp, Pavone, Zhang at the time the invention was made to modify

the system of Qian, Shiihara, Knupp, Pavone to include the limitations as taught by Zhang. One of ordinary skill in the art would be motivated to make this combination in order to convert the spatial data into the frequency domain in view of Zhang, as doing so would give the added benefit of providing a wavelet-based method of managing spatial data in very large databases as taught by Zhang (Summary).

As per claim 4, Shiihara teaches the method of claim 1, wherein the geographic feature is the boundary of a feature selected from the group consisting of a road, waterway, building, park, lake, railroad track, and airport *(See Figs. 3-5)*.

As per claim 7, Qian teaches the method of claim 1, wherein the wavelet coefficients are computed using a semi-discrete orthonormal wavelet transform *(i.e. The system and method first selects a filter P(z) in response to user input, wherein a mother wavelet is associated with the filter P(z). Selecting the type of filter P(z) comprises selecting an orthogonal type or biorthogonal type of filter, as well as selecting either a maximum flat type of filter or equiripple type of filter, Summary)*.

Claims 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Qian et al. (US Patent No. 6,108,609), in view of Shiihara (US Patent No. 5,541,592), in view of Knupp (US Patent No. 5,966,672), and Pavone et al. (US Patent No. 5,663,929).

As per claim 8, Qian teaches a method of displaying on a computer output device a representation of a geographic feature *(i.e. These variables simultaneously*

change as the user changes the design. If the user incorporates those parameters into his own application, the user can see the effect of the different design. FIG. 33 illustrates how LabVIEW uses these two parameters to implement a Wavelet Packet similar to the one displayed in FIG. 32, Wavelet Packet, col. 20, lines 52-57), comprising:

identifying a display scale for displaying the representation of the geographic feature, wherein the display scale is one of several display scale levels useable for a zooming operation of a map display *(i.e. If two zeros are too close to choose, the user uses the Zoom Tool palette, located in the lower right corner of the Design Panel to zoom in on these zeros until these zeros can be identified. For maximum flat filters, there are multiple zeros at z=0. The user uses the zeros at .pi. button to control how many zeros at z=0 go to G.sub.0 (z), col. 17, lines 35-42)*;

retrieving *(i.e. the user further can select a number of taps parameter in response to user input, wherein the number of taps parameter determines a number of coefficients of P(z), Summary)* from a computer-usable database a plurality of wavelet coefficients *(i.e. The system and method first selects a filter P(z) in response to user input, wherein a mother wavelet is associated with the filter P(z). Selecting the type of filter P(z) comprises selecting an orthogonal type or biorthogonal type of filter, as well as selecting either a maximum flat type of filter or equiripple type of filter, Summary)* associated with the geographic feature at the identified display scale *(i.e. Two-Dimensional Data Test, col. 19, lines 9-13)*, wherein a wavelet being one of a family of functions having a form:

ψ_{ab} (x) = ψ (|a| to the power $_{-1/2}$) ψ ((x-b)/a)

where in ψ_{ab} (x) is called a mother wavelet *(i.e. the mother wavelet function, See Abstract)*, a *(i.e. m, col. 2, line 55 to col. 3, line 7)* is called a dilation parameter, b *(i.e. n, col. 2, line 55 to col. 3, line 7)* is called a translation parameter *(i.e. n, col. 2, line 55 to col. 3, line 7),* and x *(i.e. t, col. 2, lines 55 to col. 3, line 7)* is an independent variable, the wavelet coefficients being derived from a plurality of latitude and longitude data points specifying geographic locations on the geographic feature, wherein each of the wavelet coefficients are assigned to at least one of the of display scale levels; *(i.e. These variables simultaneously change as the user changes the design. If the user incorporates those parameters into his own application, the user can see the effect of the different design. FIG. 33 illustrates how LabVIEW uses these two parameters to implement a Wavelet Packet similar to the one displayed in FIG. 32, Wavelet Packet, col. 20, lines 52-57)*;

generating a parameterized function representing the geographic feature at eh display scale using the retrieved wavelet coefficients *(i.e. These variables simultaneously change as the user changes the design. If the user incorporates those parameters into his own application, the user can see the effect of the different design. FIG. 33 illustrates how LabVIEW uses these two parameters to implement a Wavelet Packet similar to the one displayed in FIG. 32, Wavelet Packet, col. 20, lines 52-57)*; and

displaying a line on the computer output device corresponding to the parameterized function representing the geographic feature at the display scale *(i.e.*

Using wavelet analysis, one also can look at a signal from different scales, commonly called multiscale analysis. Wavelet transform-based multiscale analysis provides a better understanding of the signal and provides a useful tool for selectively discarding undesired components, such as noise and trend, that corrupt the original signals, col. 21, lines 20-25).

The teaching of Qian implies these limitations:

cartographic data *(i.e. Data--Reads a 2D spreadsheet text file or stand image file, such as a.TIF or .BMP file. Be sure to choose the correct data type when reading the data file, col. 19, lines 48-50)*;

latitude and longitude *(i.e. Two-Dimensional Data Test, col. 19, lines 9-13)* data points indicating locations *(i.e. These variables simultaneously change as the user changes the design. If the user incorporates those parameters into his own application, the user can see the effect of the different design. FIG. 33 illustrates how LabVIEW uses these two parameters to implement a Wavelet Packet similar to the one displayed in FIG. 32, Wavelet Packet, col. 20, lines 52-57)*;

identifying a display scale for displaying the representation of the geographic feature, wherein the display scale is one of several display scale levels useable for a zooming operation of a map display *(i.e. If two zeros are too close to choose, the user uses the Zoom Tool palette, located in the lower right corner of the Design Panel to zoom in on these zeros until these zeros can be identified. For maximum flat filters, there are multiple zeros at z=0. The user uses the zeros at .pi. button to control how many zeros at z=0 go to G.sub.0 (z), col. 17, lines 35-42)*;

generating a parameterized function representing the geographic feature at the display scale using the retrieved wavelet coefficients *(i.e. These variables simultaneously change as the user changes the design. If the user incorporates those parameters into his own application, the user can see the effect of the different design. FIG. 33 illustrates how LabVIEW uses these two parameters to implement a Wavelet Packet similar to the one displayed in FIG. 32, Wavelet Packet, col. 20, lines 52-57)*; and

displaying a line on the computer output device corresponding to the parameterized function representing the geographic feature at the display scale *(i.e. Using wavelet analysis, one also can look at a signal from different scales, commonly called multiscale analysis. Wavelet transform-based multiscale analysis provides a better understanding of the signal and provides a useful tool for selectively discarding undesired components, such as noise and trend, that corrupt the original signals, col. 21, lines 20-25)*;

a family of function having a form:

ψ_{ab} (x) = ψ (|a| to the power $_{-1/2}$) ψ ((x-b)/a) *(col. 2, formula 3-4)*.

Quan does not clearly state the above limitations.

Shiihara teaches:

latitude and longitude data points indicating locations *(See Figs. 3-5)*;

identifying a display scale for displaying the representation of the geographic feature, wherein the display scale is one of several display scale levels useable for a zooming operation of a map display *(See Figs. 3-5)*;

generating a parameterized function representing the geographic feature at eh display scale using the retrieved wavelet coefficients *(See Figs. 3-5)*; and

displaying a line on the computer output device corresponding to the parameterized function representing the geographic feature at the display scale *(See Figs. 3-5)*.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains to have modified the *computed wavelet and scaling function* of Qian by applying the teaching of Shiihara in order to provide a positioning system having an improved simulated navigation mode on a map displaying.

Qian and Shiihara do not state “cartographic data”.

Knupp teaches cartographic data *(i.e. coordinate information for locating all data will be needed, which includes X, Y, Z and geometry data for seismic, well coordinates, cartographic data, and well deviation data, col. 18, lines 39-41)*;

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains to have modified the *computed wavelet and scaling function* of Qian by applying the teaching of Knupp in order to effectively achieve the best representation of data which allows users to comprehend and analyze data at greatly enhanced rates (see Background of the invention).

Qian, Shiihara, Knupp do not exactly teach a mother wavelet as:

ψ_{ab} (x) = ψ (|a| to the power $_{-1/2}$) ψ ((x-b)/a)

Pavone teaches this mother wavelet in col. 6, lines 50-55.

It would have been obvious to one of ordinary skill of the art having the teaching of Qian, Shiihara, Knupp, and Pavone at the time the invention was made to modify the system of Qian, Shiihara, Knupp to include the limitations as taught by Pavone. One of ordinary skill in the art would be motivated to make this combination in order to decompose each segment into a wavelet so as to obtain the wavelet coefficients in view of Pavone (Abstract), as doing so would give the added benefit of providing the stage of transmission of certain characteristic coefficients as taught by Pavone (Abstract).

As per claim 9, Qian teaches the method of claim 8, further comprising:

performing the zooming operation to display another representation of said geographic feature at a different scale level by retrieving the wavelet coefficients associated with the geographic feature at the different scale level by retrieving the wavelet coefficients associated with the geographic feature at different display scale *(i.e. Using wavelet analysis, one also can look at a signal from different scales, commonly called multiscale analysis. Wavelet transform-based multiscale analysis provides a better understanding of the signal and provides a useful tool for selectively discarding undesired components, such as noise and trend, that corrupt the original signals, col. 21, lines 20-25)*.

As per claim 10, Shiihara teaches the geographic feature is the boundary of a feature selected from the group consisting of a road, waterway, building, park, lake, railroad track, and airport *(See Figs. 3-5)*.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Qian et al. (US Patent No. 6,108,609), in view of Shiihara (US Patent No. 5,541,592), in view of Knupp (US Patent No. 5,966,672), in view of Pavone et al. (US Patent No. 5,663,929), and Zhang et al. (US Patent No. 6,882,997), as applied to claims above, and further in view of Petrou et al. (US Patent No. 6,243,483).

As to claims 6, Qian, Shiihara, Knupp, Pavone, Zhang do not teach the method of claim 1, wherein the step of computing the wavelet coefficients includes:

computing the wavelet coefficients by performing a least-squares fit.

Petrou teaches this limitation *(i.e. a least squares fitting line, col. 14, lines 4-16)*.

It would have been obvious to one of ordinary skill of the art having the teaching of Qian, Shiihara, Knupp, Pavone, Zhang, Petrou at the time the invention was made to modify the system of Qian, Shiihara, Knupp, Pavone, Zhang to include the limitations as taught by Petrou. One of ordinary skill in the art would be motivated to make this combination in order to adjust the track pixels in view of Petrou (col. 14, lines 4-16), as doing so would give the added benefit of the current pipeline map can then be compared with a previous pipeline map to determine whether the route of the pipeline or a surrounding environment of the pipeline has changed as taught by Petrou (Summary).

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Qian et al. (US Patent No. 6,108,609), in view of Shiihara (US Patent No. 5,541,592), in view of Knupp (US Patent No. 5,966,672), in view of Pavone et al. (US Patent No. 5,663,929), and Zhang et al. (US Patent No. 6,882,997), and in view of Petrou et al. (US Patent No. 6,243,483), as applied to claims above, and further in view of Castelli et al. (US Patent No. 5,978,788).

As per claim 3, Qian, Shiihara, Knupp, Pavone, Zhang do not teach the method of claim 1, wherein the data points include altitude.

Castelli teaches this limitation *(i.e. In order to generate the FACT table, the attributes of the relational table are identified as Time, latitude(LAT), longitude(LON), and Altitude. The values for the attribute time is mapped to a value in an interval between 0.0 and 101.0, the latitude is mapped to a value in an interval between 0 and 180, and the longitude is mapped to a value in an interval between 0 and 90. Note that the mapping is one-to-one and reversible. However, additional empty entries might have to be created. For example, not all the time values between 0.0 and 101.0 necessarily have corresponding attribute values in the relational table. Similarly, not all the values in the valid ranges of latitude, longitude or altitude necessarily have valid entries in the original table. Thus, the FACT table can be much larger than the original table, col. 5, lines 5-28).*

It would have been obvious to one of ordinary skill of the art having the teaching of Qian, Shiihara, Knupp, Pavone, Zhang Castelli at the time the invention was made to modify the system of Qian, Shiihara, Knupp, Pavone, Zhang to include the limitations as

taught by Castelli. One of ordinary skill in the art would be motivated to make this combination in order to generate multi-representations of a data cube in view of Castelli (Summary), as doing so would give the added benefit of storing the projections generated from the wavelet transformation for later synthesis as taught by Castelli (col. 6, lines 25-38, Summary).

Response to Arguments

Applicant's arguments filed 09/22/09 have been fully considered but they are not persuasive as for the following reasons:

Claim 1 is obvious in view of the above recied combination because the claimed element "the wavelet-based representation has a smaller data size than the data point representation of the geographic feature" is disclosed or suggested in Zhang as follows:.

Zhang teaches:

We also had several other datasets to study certain characteristics of WaveCluster. One group of datasets was used to verify the sensitivity of processing time of WaveCluster with increasing number of clusters. To make a fair comparison we made the total number of data objects the same but varied the number of clusters in these datasets. ***Each dataset has 1,000,000 data objects and 20,000 noise objects****. The number of clusters in these datasets range from 2 to 100. The clusters are either rectangles (following a uniform random distribution) or ellipsoids (following 2-D normal random distribution as described before). The results for these experiments are reported in Table 3. The generation of rectangular clusters follow closely the method described in [ZM97]. We also generated several noisy versions of DS7 dataset to verify the noise removal property of WaveCluster. We added different proportions (5%, 10%, 15%. 20%,*

25%) of noise to the original DS7 dataset to create these datasets. The number of objects in them are 525,000, 550,000, 575,000, 600,000, and 625,000 respectively. The visualizations of these datasets and WaveCluster's results on them are presented in FIGS. 10a and 10b. , col. 16, lines 52 to col. 7, line 4

In this patent, we presented the clustering approach termed WaveCluster. This grid-based approach applies wavelet transform on the quantized feature space and then detects the dense regions in the transformed space. ***Applying wavelet transform makes the clusters more distinct and salient in the transformed space and thus ease their detection****. Using multiresolution property of wavelet transform,* ***WaveCluster can detect the clusters at different scales and levels of details which can be very useful in the user's applications****. Moreover,* ***applying wavelet transform removes the noise from the original feature space, and thus enables WaveCluster to handle them properly and find more accurate clusters****. WaveCluster does not make any assumption about the shape of clusters and can successfully detect arbitrary shape clusters such as concave or nested clusters. It is a very efficient method with time complexity of O(N), where N is the number of objects in the database, which makes it specially attractive for very large databases. WaveCluster is insensitive to the order of input data to be processed. Current clustering techniques do not address these issues sufficiently, although considerable work has been done in addressing each issue separately. Our experimental results demonstrated that WaveCluster can outperform the other recent clustering approaches. WaveCluster is the first attempt to apply the properties of wavelet transform in the clustering problem in spatial data mining, col. 20, lines 30-57*

Based on the excerpted paragraphs, Zhang read on the claimed limitation as:

data point representation of the geographic feature limitation equates to dataset of Zhang which contains 1,000,000 data objects and 20,000 noise objects *(i.e. Each*

dataset has 1,000,000 data objects and 20,000 noise objects, col. 16, lines 52 to col. 7, line 4).

the wavelet-based representation equates to the dataset of Zhang which contain only 1,000,000 data objects after applying wavelet transform *(i.e. applying wavelet transform removes the noise from the original feature space, and thus enables WaveCluster to handle them properly and find more accurate clusters, col. 20, lines 30-57)*.

The dataset of Zhang before applying wavelet transform contains 1,000,000 data objects and 20,000 noise objects, and after applying wavelet transform contains only 1,000,000 data objects. Therefore, the size of dataset after applying wavelet transform (i.e. the wavelet-based representation limitation) is smaller.

assigned display scales for the map display limitation equates to scales and level for user applications of Zhang *(i.e. WaveCluster can detect the clusters at different scales and levels of details which can be very useful in the user's applications, col. 20, lines 30-57).*

display scales limitation equates to scales and level of Zhang b*(i.e. WaveCluster can detect the clusters at different scales and levels of details which can be very useful in the user's applications, col. 20, lines 30-57)*.

The map display limitation equates to user applications of Zhang *(i.e. WaveCluster can detect the clusters at different scales and levels of details which can be very useful in the user's applications, col. 20, lines 30-57)*.

Therefore, the Zhang system can not be distinguished from the claim invention since Zhang teaches all such elements as discussed.

Examiner's note regarding the interview request:

Examiner was willing to work with applicant to set up for an interview, but applicant decided not to reschedule the interview after all. After much thoughts and consideration, examiner believes the amendment as presented is still read on by the combined references for the reasons set forth above.

Applicant is encouraged to contact examiner for any further questions.

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Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Miranda Le whose telephone number is (571) 272-4112. The examiner can normally be reached on Monday through Friday from 10:00 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James K. Trujillo, can be reached at (571) 272-3677. The fax number to this Art Unit is (571)-273-8300.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (571) 272-2100.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Miranda Le/
Primary Examiner, Art Unit 2159